IN THE DRAWINGS:

Please substitute the attached Replacement Sheet of drawings for the corresponding original sheet. Fig. 1 has been amended as shown in red on the attached Annotated Sheet.

REMARKS

Applicants have studied the Office Action dated February 1, 2006 and have made amendments to the claims. It is submitted that the application, as amended, is in condition for allowance. Claims 1-20 are pending. Claims 1-4, 6, 9, 12-14, 17, 19, and 20 have been amended. Reconsideration and allowance of the claims in view of the above amendments and the following remarks are respectfully requested.

The drawings were objected to because Figure was not designated by a legend such as "Prior Art". Please substitute the attached Replacement Sheet for the corresponding original sheet. Figure 1 has been amended as shown in red on the attached Annotated Sheet. In particular, Figure has been labeled "Prior Art" as requested by the Examiner. No new matter has been added. In light of this amendment, it is submitted that this objection to the drawings should be withdrawn.

The drawings were also objected to for not including a reference label mentioned in the specification. The Examiner stated that the reference label "Vss" was not included in the drawings. However, the reference label "Vss" is shown in Figure 1 (below element 15). Therefore, it is submitted that this objection to the drawings should also be withdrawn.

Claims 1-3, 7, 8, and 15-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Goerke et al. (U.S. Patent No. 5,861,737) in view of Huang et al. (U.S. Patent No. 6,841,977). This rejection is respectfully traversed.

Embodiments of the present invention provide a circuit for controlling the **minimum** operating voltage of a switching power supply. See specification at page 1, lines 13-16. In preferred embodiments, the circuit changes the **minimum** operating voltage from a first voltage value Vstop1 to a second voltage value Vstop2 in the case of a low or null load on the switching power supply, and from the second voltage value Vstop2 to the first voltage value Vstop1 when the load is higher than a given load value.

See specification at page 10, lines 13-18. Therefore, the minimum operating voltage applied to the terminals of the load is controlled by this control circuit and changed as a function of the value of the load.

Importantly, the control circuit of the present invention is specifically designed to be operable under short circuit conditions. Therefore, the fist and second voltage values Vstop1 and Vstop2 are both greater than zero at all times of circuit operation. See specification at page 8, lines 6-11; FIG. 3a. During operation, following the application of a short circuit, after a first short period in which the voltage Vcc tends to increase, there is a slow decrease toward lower values. See specification at page 9, lines 10-11; FIG. 3a. At the removal of the short circuit (with Vcc not having gone below the first voltage value Vstop1 so that the integrated control circuit has always been turned on), Vcc goes up again toward the normal operating value in advance with respect to Vcomp. See specification at page 9, lines 12-15; FIG. 3b. Therefore, Vcc never reaches zero. In other words, a feature of the present invention is the presence of a non-zero voltage value for Vcc during a short circuit.

Amended independent claim 1 recites a circuit for controlling a minimum operating voltage that includes:

> at least one switch for switching the minimum operating voltage from a first **non-zero** voltage value to a second **non-zero** voltage value under conditions of low or null load of the switching power supply, and for switching the minimum operating voltage from the second **non-zero** voltage value to the first **non-zero** voltage value if the load of the switching power supply is greater than a determined load and the supply voltage is greater than the first **non-zero** voltage value.

Similarly, amended independent claim 17 recites a method for controlling a minimum operating voltage that includes:

switching the minimum operating voltage from a first **non-zero** voltage value to a second **non-zero** voltage value under conditions of low or null load of the switching power supply; and

switching the minimum operating voltage from the second **non-zero** voltage value to the first **non-zero** voltage value if the load of the switching power supply is greater than a determined load and the supply voltage is greater than the first **non-zero** voltage value,

The Goerke reference discloses a soft-start switch with voltage regulation and current limiting. The entire purpose of Goerke is to provide a switch that, when first turned on, provides to the load a voltage that gradually rises **from zero** to some level. See Goerke at col. 1, lines 21-24. Clearly, Goerke is not concerned with "providing a circuit for controlling the **minimum** operating voltage of the integrated control circuit of a switching power supply", as are embodiments of the present invention. See specification at page 5, lines 25-27.

In fact, Goerke actually *teaches away* from "providing a circuit for controlling the **minimum** operating voltage of the integrated control circuit of a switching power supply." The circuit of Goerke is shown in FIG. 4. In describing this circuit, Goerke specifically states that "capacitor 240 provides for a shut-down of the soft-start switch of FIG. 4 when there is an instantaneous short in the load 55 after the soft-start switch has already soft-started load 55." See Goerke at col. 8, lines 39-42. Therefore, Goerke teaches the **opposite** of the entire purpose of the circuit of the present invention, which is to control the minimum operating voltage of a power supply even during a short circuit.

A cited reference that teaches away per se demonstrates a lack of a prima facie case of obviousness. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). The circuit taught by Goerke is specifically designed for use during a minimum voltage of zero (i.e., a start up condition). Clearly, Goerke does not disclose "switching the minimum operating voltage from a first non-zero voltage value to a second non-zero voltage value under conditions of low or null load of the switching power supply," as is recited in amended claim 1. Amended claim 17 contains similar recitations.

Additionally, the Examiner correctly recognizes that "Goerke does not disclose a circuit for switching the minimum operating voltage from a first voltage value to a second voltage value under conditions of low or null load of the switching power supply." However, the Examiner goes on to state that the Huang reference teaches this claimed feature. According to he Examiner, Huang discloses a circuit to ground a point when a soft start indication from the PWM is received.

However, Huang does not disclose "switching the minimum operating voltage from a first non-zero voltage value to a second non-zero voltage value under conditions of low or null load of the switching power supply," as is recited in amended claim 1. Amended claim 17 contains similar recitations. Huang discloses grounding, which brings the voltage to zero. Therefore, Huang does not teach or suggest the claimed features of the present invention that are absent from Goerke.

Applicants believe that the differences between Goerke, Huang, and the present invention are clear in amended claims 1 and 17, which set forth a circuit and a method according to embodiments of the present invention. Therefore, claims 1 and 17 distinguish over the Goerke and Huang references, and the rejection of these claims under 35 U.S.C. § 103(a) should be withdrawn.

Claims 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Goerke et al. in view of Huang et al. and Hall et al. (U.S. Patent No. 6,597,221).

Amended independent claim 9 recites a circuit for controlling a minimum operating voltage that includes:

a selection circuit coupled to the first and second comparators, the selection circuit switching the minimum operating voltage from the first **non-zero** voltage value to a second **non-zero** voltage value when the first comparator indicates that the control voltage is less than the first reference voltage, and switching the minimum operating voltage from the second **non-zero** voltage value to the first **non-zero** voltage value when the first comparator indicates that the control voltage is greater than the first reference voltage and the second comparator indicates that the supply voltage is greater than the first **non-zero** voltage value,

wherein the first **non-zero** voltage value is greater than the second **non-zero** voltage value.

The deficiencies of the Goerke and Huang references are discussed above. Goerke is a soft start switch that goes from zero volts to a preset level at the startup of a device. The Examiner states that Huang grounds a point (i.e., zero volts at output) when soft start indication is received, and Hall opens a switch with the supply voltage is less than a reference. Thus, the combination of these features taught by Huang and Hall into the circuit disclosed in Goerke would produce a digital circuit that goes from open to short. Therefore, the combination of Goerke, Huang, and Hall actually *teaches away from* the circuit of the present invention, which is "a circuit for controlling a minimum operating voltage of an integrated control circuit of a switching power supply having a supply voltage" with a selection circuit that switches the minimum operating voltage from the first non-zero voltage value to a second non-zero voltage value when the first comparator indicates that the control voltage is less than the first reference voltage, and from the second non-zero voltage value to the first non-zero voltage value when the first comparator indicates that the control voltage is greater than the first reference voltage, as is recited in amended claim 9. A cited reference that teaches away per se demonstrates a lack of a prima facie case of obviousness. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants believe that the differences between Goerke, Huang, Hall, and the present invention are clear in amended claim 9, which sets forth a circuit according to an embodiment of the present invention. Therefore, claim 9 distinguishes over the Goerke, Huang, and Hall references, and the rejection of this claims under 35 U.S.C. § 103(a) should be withdrawn.

As discussed above, amended claims 1, 9, and 17 distinguish over the Goerke, Huang, and Hall references, and thus, claims 2, 3, 7, and 8, claims 10, 11, 15, and 16, and claims 18 and 19 (which depend from claims 1, 9, and 17, respectively) also distinguish over the Goerke, Huang, and Hall references. Therefore, it is respectfully submitted that the rejections of claims 1-3, 7-11, and 15-19 under 35 U.S.C. § 103(a) should be withdrawn.

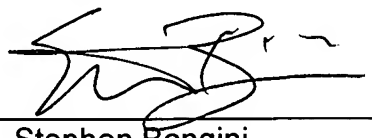
Applicants thank the Examiner for indicating that claims 4-6, 12-14, and 20 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. Claims 4, 12, and 20 have been rewritten in independent form, and further amended. Claims 5 and 6 depend from claim 4, and claims 13 and 14 have been amended to depend from claim 12. Accordingly, it is respectfully submitted that claims 4-6, 12-14, and 20 are now in condition for allowance.

In view of the foregoing, it is respectfully submitted that the application and the claims are in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is invited to call the undersigned attorney at (561) 989-9811 should the Examiner believe a telephone interview would advance the prosecution of the application.

Respectfully submitted,

Date: July 3, 2006

By: 

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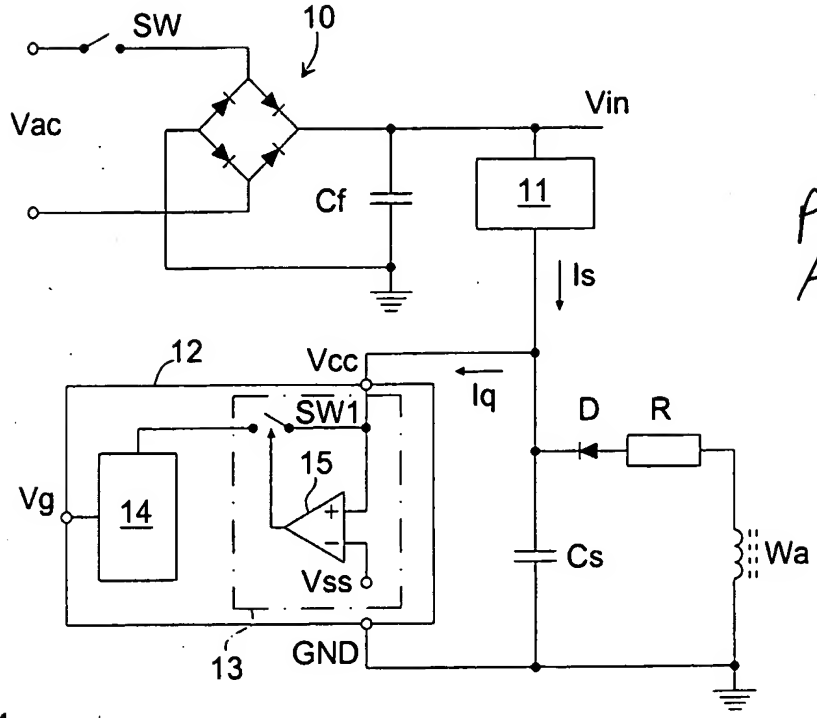

PRIOR ART

Fig.1

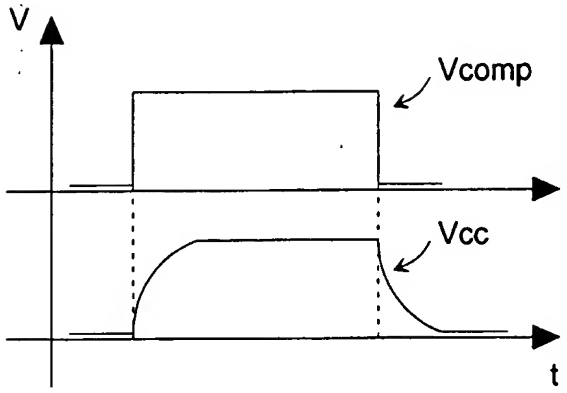

Fig.2